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December 14, 2005

Sent by email to: David Lockard, AEA Project Manager
(7 Pages Total) dlockard@aidea.org

Re: Elfin Cove Energy Infrastructure Projects
Power Plant Site Investigation

Dear Mr. Lockard,

The majority of community responses to the Elfin Cove Energy Infrastructure Projects Preliminary Recommendations report issued in early May, 2005 indicate a desire to keep the power plant in its existing location rather than relocate it to a site near the tank farm as suggested in the report. Our initial concept was based on preliminary information that would have precluded the existing power plant from a potential renovation project due to inadequate property setbacks. Further investigation and discussions with the State Fire Marshall's office indicate that the existing power plant building can be modified to meet International Building Code (IBC) fire separation requirements. See attached Sheets M1 through M5 for additional information.

1) Power Plant Site Fire Separation Distances:

The IBC requires minimum separations from buildings to a property line or the centerline of a public easement (fire separation distance) depending on occupancy, type of building construction and fire resistance rating of exterior walls. The power plant falls within IBC occupancy group F-1 (Factory Industrial, Moderate Hazard), which includes electric light plants and power houses. The adjacent community building is currently used for public meetings, which falls under occupancy group A-3 (Community Halls). The adjacent Lodge falls under occupancy group R-1 (Boarding Houses & Hotels). For the purposes of this study it is assumed that all three buildings are non-fire rated construction throughout with no automatic sprinkler systems, which classifies them as Type V-B construction per the IBC. The following table summarizes the IBC fire-resistance rating and fire separation distance requirements for the previously mentioned occupancy groups of construction Type V-B only:

FIRE-RESISTENCE RATING REQUIREMENTS (TYPE V-B CONSTRUCTION ONLY)

FIRE SEPARATION DISTANCE	OCCUPANCY GROUP F-1 (POWER PLANT)	OCCUPANCY GROUP A-3 (COMMUNITY BUILDING)	OCCUPANCY GROUP R-1 (LODGE)
less than 5'	2hr	2hr	2hr
greater than or equal to 5' and less than 10'	1hr	1hr	1hr
greater than or equal to 10' and less than 30'	0hr	0hr	0hr

The existing power plant entry/storage room encroaches into the public easement and is less than 5'-0" from the easement centerline. The IBC would require the walls and door in this area to be 2hr rated assemblies, which would be impractical to meet. Therefore it is proposed to remove the existing entry/storage room and relocate it so that it does not encroach into the public easement and is at least 5'-0" from the easement centerline, which would require only a 1hr rated door and wall assembly.

The proposed fire separation boundary as shown on Sheet M2 would be less than 10' from the walls of the existing lodge and community buildings. According to the State Fire Marshall's Office, this would not immediately impact these buildings. However, any future major renovations to the affected portions of these buildings would require a plan review and could require existing structural assemblies to be improved to a 1hr or 2hr rating at the time of the future renovation.

2) Heat Recovery:

The community building is currently heated with generation heat recovery from the power plant. The relocation of the power plant to the tank farm property would have reduced the efficiency of the heat recovery system and would have increased the project costs. The power plant renovation will include new generation heat recovery equipment if it proves economically justifiable.

3) Power Plant Noise Level:

The noise level from the current power plant is acceptable to the community, largely due to the extensive use of pre-formed concrete walls in the existing building. The proposed renovations to the existing power plant should maintain or reduce the noise level. Improvements will include additional drywall in the exterior wall of the entry room and an upgrade to hospital grade silencers on all three engines. All new ventilation openings will utilize sound linings within interior and exterior ducts and will be located to minimize noise transmission. It is difficult to predict the community noise level impact of a new modular power plant located at a site near the tank farm due to the unknown sound characteristics of a new location and the foam sandwich panel construction of the module.

4) Emissions:

The soot level from the new generators will be better than the existing generators due to advances in engine technology. New automatic paralleling switchgear will allow for better matching of online generation to community demand, which will also improve emissions. With continuous preheat, offline generators can be brought online by the new switchgear in less than thirty seconds. This will eliminate the sudden demand problems experienced with the prior generation automatic paralleling switchgear. These improvements will be the same regardless of the power plant site selected.

5) Project Costs:

The estimated installed cost of a new modular power plant in Elfin Cove is approximately $1,200,000, including a 20% contingency. It is estimated that renovation of the existing power plant will reduce the cost of the project by at least $200,000.

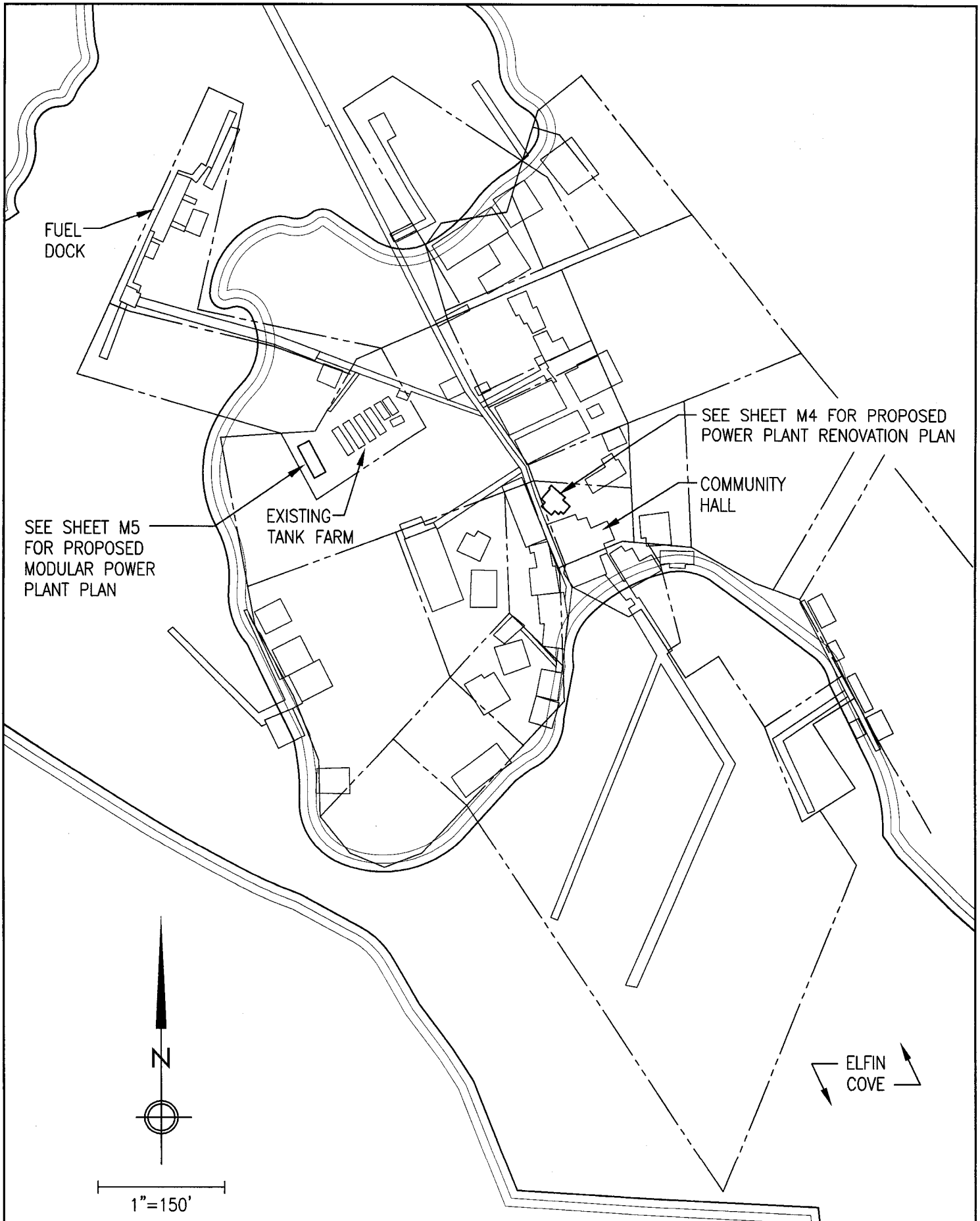
6) Conclusion:

A renovation design for the existing power plant appears to be technically feasible. Prior to developing the CDR for a renovation project we need confirmation from the community that this is the preferred option. It should be noted that the construction of either option is contingent upon future construction funding availability. Renovating the existing power plant rather than installing a new power plant module is likely to reduce the total project cost and improve the chances of funding for and operation of the heat recovery system. However, a disadvantage to using the existing building is that the new switchgear would remain in the same room as the generators rather than in a separate control room.

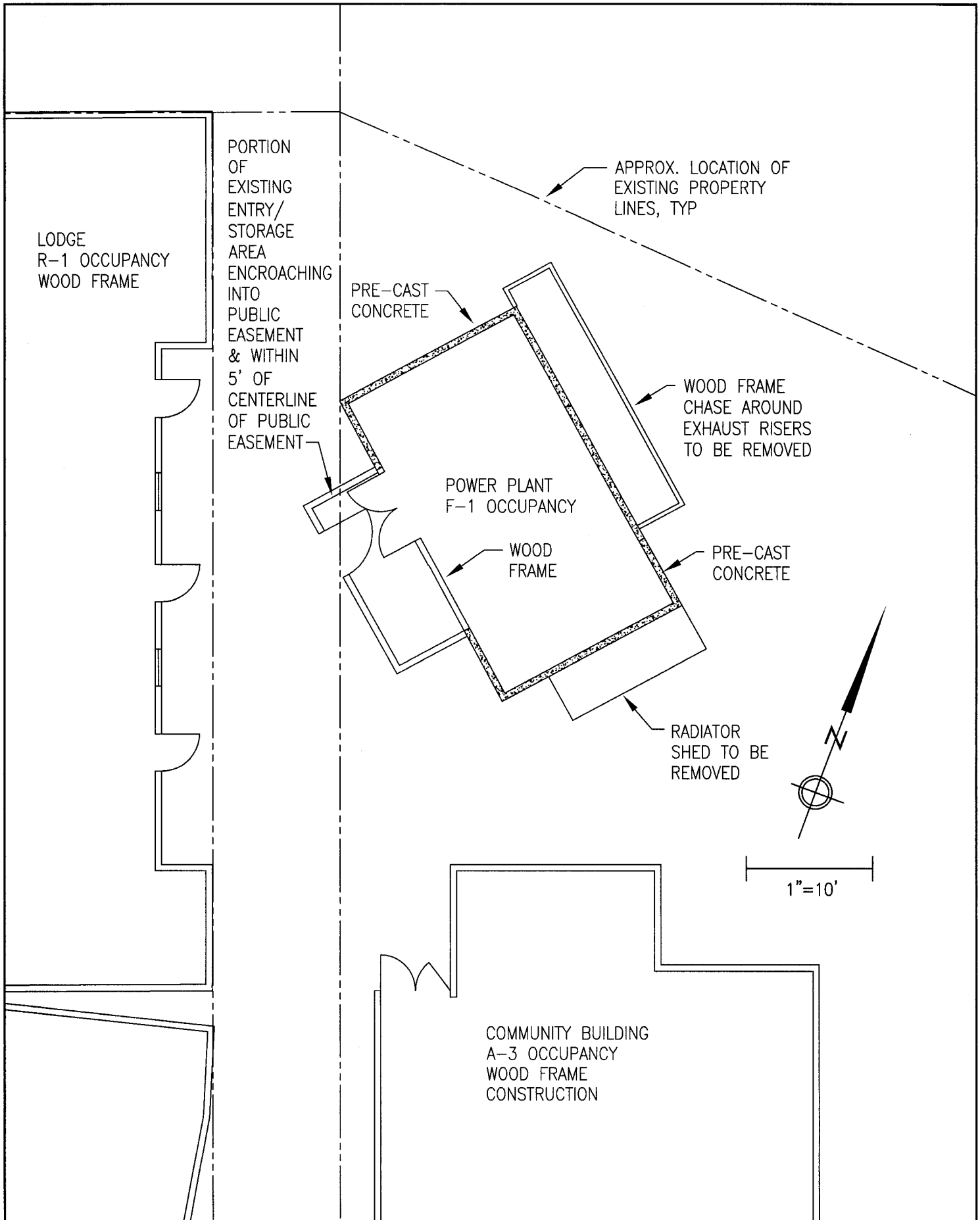
Sincerely,

Alaska Energy & Engineering

John Dickerson
Project Engineer



PROJECT: ELFIN COVE ENERGY INFRASTRUCTURE PROJECTS	DRAWN BY:	SCALE: 1"= 150'	State of Alaska Department of Community and Economic Development AIDEA/AEA Rural Energy Group 813 West Northern Lights Blvd. Anchorage, Alaska 99503 ALASKA ENERGY AUTHORITY
	DESIGNED BY:	DATE:	
TITLE: COMMUNITY SITE PLAN	FILE NAME ELFIN-M1	SHEET M1 OF 5	



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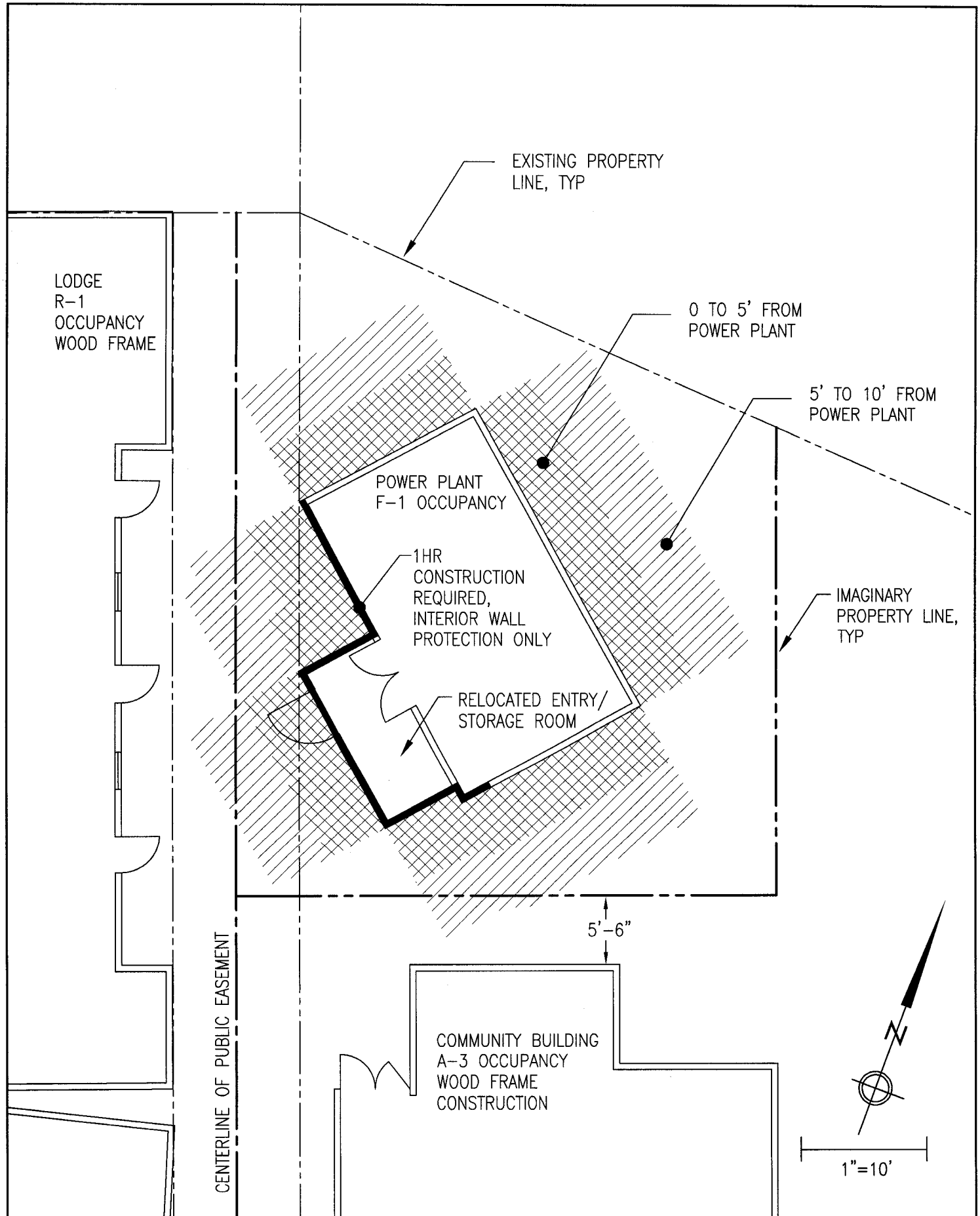
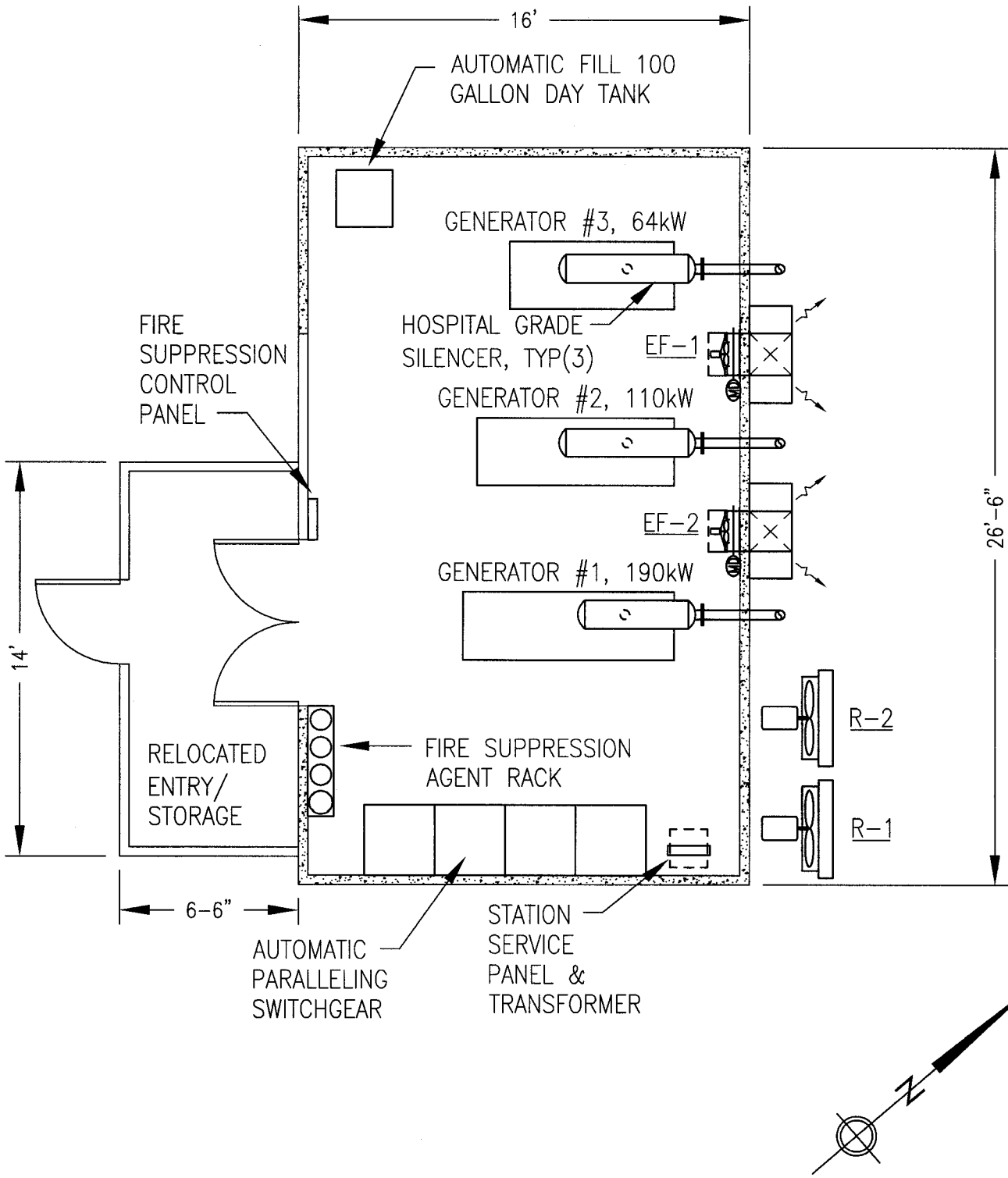
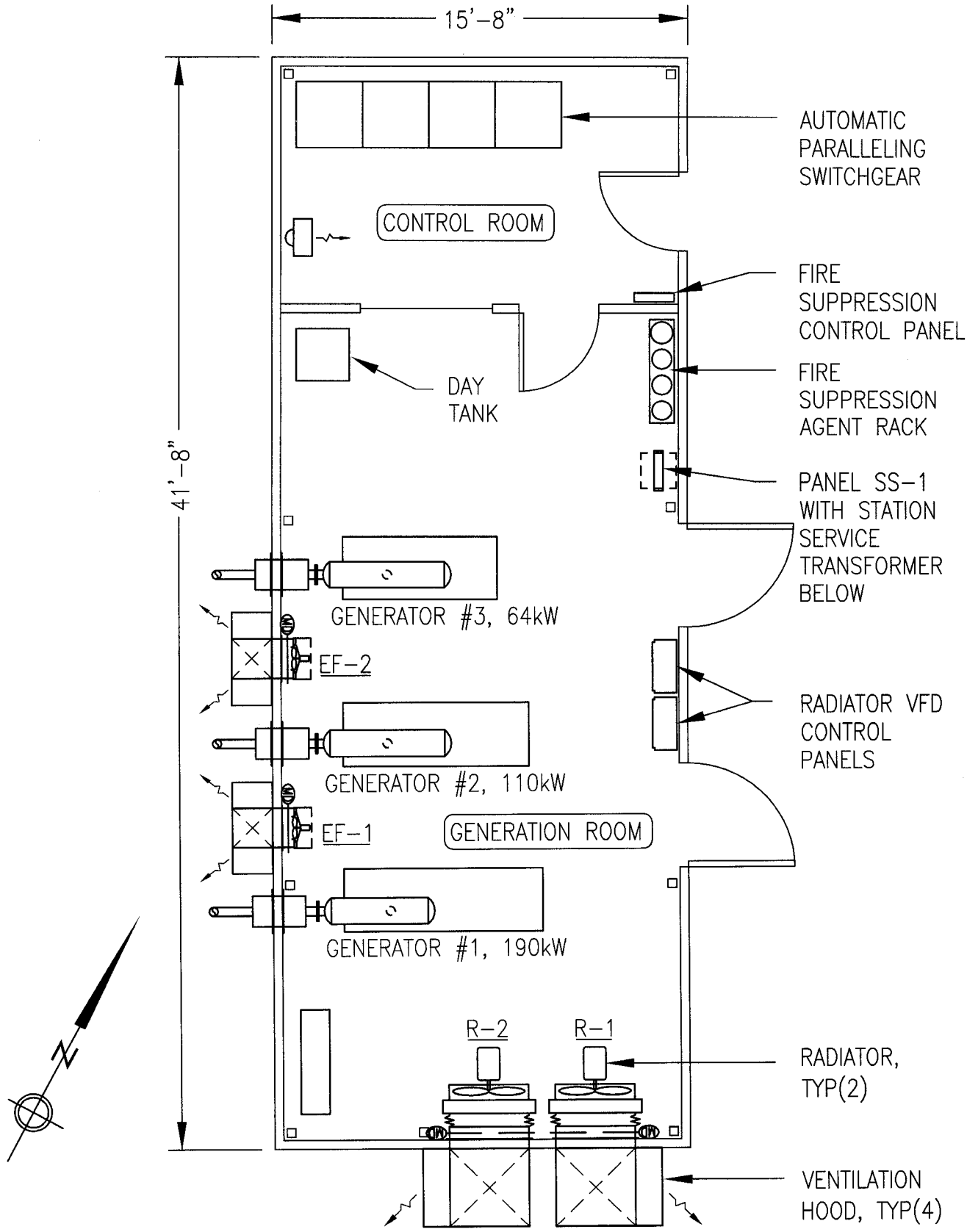
	DESIGNED BY:	DATE:	
TITLE: POWER PLANT EXISTING SITE/DEMOLITION PLAN	FILE NAME ELFIN-M2	SHEET M2 OF 5	



PROJECT: ELFIN COVE ENERGY INFRASTRUCTURE PROJECTS	DRAWN BY:	SCALE: 1"= 10'	State of Alaska Department of Community and Economic Development AIDEA/AEA Rural Energy Group 813 West Northern Lights Blvd. Anchorage, Alaska 99503 ALASKA ENERGY AUTHORITY
	DESIGNED BY:	DATE:	
TITLE: POWER PLANT PROPOSED FIRE SEPARATION PLAN	FILE NAME ELFIN-M3	SHEET M3 OF 5	



PROJECT: ELFIN COVE ENERGY INFRASTRUCTURE PROJECTS	DRAWN BY: BCG	SCALE: 3/16"=1'	State of Alaska Department of Community and Economic Development AIDEA/AEA Rural Energy Group 813 West Northern Lights Blvd. Anchorage, Alaska 99503 ALASKA ENERGY AUTHORITY
	DESIGNED BY: BCG	DATE:	
TITLE: POWER PLANT RENOVATION PLAN	FILE NAME ELFIN-M4	SHEET M4 OF 5	



PROJECT: ELFIN COVE ENERGY INFRASTRUCTURE PROJECTS	DRAWN BY: BCG	SCALE: 3/16"=1'	State of Alaska Department of Community and Economic Development AIDEA/AEA Rural Energy Group 813 West Northern Lights Blvd. Anchorage, Alaska 99503 ALASKA ENERGY AUTHORITY
	DESIGNED BY: BCG	DATE:	
TITLE: GENERATOR MODULE PLAN	FILE NAME ELFIN-M5	SHEET M5 OF 5	